

CLAIMS:

1. A communication system including an in-home network and a remote device;
the in-home network including a plurality of in-home devices operative to communicate using predetermined in-home protocols including an in-home application protocol; at least one of the in-home devices, being referred to as intermediate device, also being operative to communicate with the remote device using predetermined remote protocols including a remote application protocol which differs from the in-home application protocol;
- the remote device being operative to load a portable application program for controlling at least one of the in-home devices by calling an Application Program Interface (API) of the in-home application protocol; and load an API emulator operative to provide a callable interface for functions of the in-home application protocol, and to supply this API functionality by communicating with a module in the intermediate device using the remote protocols;
- the intermediate device including:
 - an API operative to provide interface functionality for the functions of the in-home application protocol by controlling the intermediate device an/or communicating with other in-home device(s) according to application messages of the in-home application protocol; and
 - the module for communicating between the API emulator in the remote device and the API in the intermediate device, establishing a substantially transparent communication path between the portable application program in the remote device and the API in the intermediate device.
2. A communication system as claimed in claim 1, wherein the in-home protocols include a messaging protocol, hierarchically below the in-home application protocol, and the API emulator being operative to supply the API functionality by executing the in-home application protocol in the remote device and supplying the in-home application protocol an interface to the messaging protocol by communicating with the module in the intermediate device using the remote protocols.

3. A communication system as claimed in claim 1, wherein the in-home application protocols are HAVi based.

5 4. A communication system as claimed in claim 1, wherein the portable application program is Java based.

5. A communication system as claimed in claim 1, wherein the remote protocols are based on Internet protocols.

10 6. A communication system as claimed in claim 1, wherein the API emulator and the module communicate using a remote procedure calling protocol, such as SOAP.

15 7. A communication system as claimed in claim 1, wherein information to be communicated between the API emulator and the module are described using a mark-up language, such as XML.

20 8. A communication system as claimed in claim 1, wherein the remote device is operative to load the portable application program and/or API emulator from the intermediate device.

9. A communication system as claimed in claim 8, wherein the intermediate device is operative to load the portable application program and/or API emulator from an in-home device, other than the intermediate device, via the intermediate device.

25 10. A remote device for use in a communication system as claimed in claim 1, the remote device being operative to load a portable application program for controlling an in-home device by calling an Application Program Interface (API) of an in-home application protocol; and load an API emulator operative to provide a callable interface for functions of the in-home application protocol, and to supply this API functionality by communicating with a module in an intermediate device using predetermined remote protocols including a remote application protocol which differs from the in-home application protocol; the intermediate device being on an in-home network including a plurality of in-home devices

operative to communicate using predetermined in-home protocols including the in-home application protocol.

11. An intermediate device for use in a communication system as claimed in claim

5 1, the intermediate device being on an in-home network including a plurality of in-home devices operative to communicate using predetermined in-home protocols including an in-home application protocol; the intermediate device also being operative to communicate with a remote device using predetermined remote protocols including a remote application protocol which differs from the in-home application protocol; the intermediate device

10 including:

- an Application Program Interface (API) of the in-home application protocol operative to provide interface functionality for functions of the in-home application protocol by controlling the intermediate device and/or communicating with other in-home device(s) according to application messages of the in-home application protocol; and

15 - a module for communicating between an API emulator in the remote device and the API in the intermediate device, establishing a substantially transparent communication path between a portable application program in the remote device and the API in the intermediate device, where the portable application program is operative to control at least one of the in-home devices by calling an Application Program Interface (API) of the in-home application protocol; and the API emulator is operative to provide a callable interface for functions of the in-home application protocol, and to supply this API functionality by communicating with the module in the intermediate device using the remote protocols.

25 12. A method of communicating in a communication system including an in-home network and a remote device; the in-home network including a plurality of in-home devices operative to communicate using predetermined in-home protocols including an in-home application protocol; at least one of the in-home devices, being referred to as intermediate device, also being operative to communicate with the remote device using predetermined remote protocols including a remote application protocol which differs from the in-home application protocol; the method including:

- in the remote device, loading and executing a portable application program for controlling at least one of the in-home devices by calling an Application Program Interface (API) of the in-home application protocol; and loading and executing an API emulator

operative to provide a callable interface for functions of the in-home application protocol, and to supply this API functionality by communicating with a module in the intermediate device using the remote protocols; and

- in the intermediate device, loading and executing:

- 5 - an API operative to provide interface functionality for the functions of the in-home application protocol by controlling the intermediate device an/or communicating with other in-home device(s) according to application messages of the in-home application protocol; and
 - the module for communicating between the API emulator in the
- 10 remote device and the API in the intermediate device, establishing a substantially transparent communication path between the portable application program in the remote device and the API in the intermediate device.